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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/730,103

12/05/2000

Paul R. Iverson

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01/07/2005

Attention: Eric D. Levinson
Imation Corp.
Legal Affairs
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EXAMINER

CHU, KIM KWOK

ART UNIT

PAPER NUMBER

2653

DATE MAILED: 01/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/730,103

Applicant(s)

IVERSON ET AL.

Examiner

Kim-Kwok CHU

Art Unit

2653

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed on 10/1/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Remarks

1. Applicant's Remarks filed on September 30, 2004 have been fully considered.

(a) Applicant clarifies his invention by amending the claim 1 with additional limitations such as "a non-magnetic transducer for a data playback system in which the non-magnetic transducer senses variations in physical features of a patterned data storage medium" (page 4 of the Remarks, last paragraph). Accordingly, a new prior art of Abraham et al. (U.S. Patent 5,753,803). is cited as prior art to reject the amended claims.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

*A person shall be entitled to a patent unless:
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United State.*

3. Claim 1 is rejected under 35 U.S.C. § 102(b) as being anticipated by Abraham et al. (U.S. Patent 5,753,803).

Abraham teaches a data playback system having all of the elements and means as recited in claim 1. For example, Abraham teaches the following:

(a) as in claim 1, the non-magnetic transducer 10 (Fig. 1; column 2, lines 1-11);

(b) the non-magnetic transducer 10 senses variations in physical features 14 of a patterned data storage medium 12 (Fig. 1; column 2, lines 1-11);

(c) as in claim 1, a temperature sensitive resistor 16 mounted on the slider 10 for a flying head application in which the slider 10 flies over the patterned data storage medium 12 such that the temperature sensitive resistor 16 is positioned proximate the physical features of the patterned data storage medium (Fig. 1);

(d) as in claim 1, a bias current path I_B including the temperature sensitive resistor 16 (Fig. 2); and

(e) as in claim 1, the transducer 10 produces signals that represent data recorded in the patterned data storage medium (Fig. 1; column 2, lines 33-36).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2, 4, 7, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abraham et al. (U.S. Patent 5,753,803) in view of Wickramasinghe et al. (U.S. Patent 4,747,698).

Abraham teaches a temperature sensitive transducer very similar to that of the instant invention. However, Abraham does not teach the following:

(a) as in claim 2, the temperature sensitive resistor comprises a thermistor including a semiconductor;

(b) as in claim 4, the temperature sensitive resistor comprises a resistance temperature detector including a metal;

(c) as in claim 7, the transducer having leads that define the bias current path through the temperature sensitive resistor and in which the transducer and the leads are the same material;

(d) as in claim 8, the transducer is generally V-shaped;
and

(e) as in claim 9, a heating element in close proximity
to the temperature sensitive resistor.

Wickramasinghe teaches the following:

(a) a temperature sensitive resistor 52 comprises a
thermistor including a semiconductor (Fig. 2; thermistor is a
semiconductor device; column 5, lines 13 and 14);

(b) the temperature sensitive resistor 52 comprises a
resistance temperature detector including a metal (Fig. 2;
thermal couple is made of different metals bonded together;
column 5, lines 13 and 14);

(c) the transducer 26 having leads that define the bias
current path through the temperature sensitive resistor and in
which the transducer 26 and the leads are the same material
(Fig. 2; thermal sensitive material 52 is part of the leads
carrying currents);

(d) the transducer is generally V-shaped (Fig. 2); and

(e) a heating element 34 in close proximity to the
temperature sensitive resistor (Fig. 1; column 7, lines 40-46).

Although Abraham does not specify the structure and
material which made up his transducer, however, for detecting
and generating thermal energies with a surface sensing means
which can be attached to a flying slider such as Abraham's and

Wickramasinghe's, it would have been obvious to one of ordinary skill in the art at the time of invention to use a temperature sensing means having structures and elements such as Wickramasinghe's, because Wickramasinghe's temperature sensing means is an surface scanning probe which can be installed on the slider.

6. Claims 3, 5, 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abraham (U.S. Patent 5,753,803) in view of Wickramasinghe et al. (U.S. Patent 4,747,698) and further in view of Kawaguchi et al. (U.S. Patent 4,952,902).

Abraham in view of Wickramasinghe teach a temperature sensitive transducer very similar to that of the instant invention. However, both Abraham and Wickramasinghe do not teach the following:

- (a) as in claim 3, the thermistor comprises a material selected from the group consisting essentially of boron-doped diamond-like carbon;

- (b) as in claim 5, the resistance temperature detector comprises a material selected from the group consisting essentially of and platinum;

- (c) as in claim 6, the transducer is a thin film structure; and

(d) as in claim 10, a protective coating layer on the bottom of the transducer.

Kawaguchi teaches a thermal to electric transducer made of the following:

(a) the thermistor comprises a material selected from the group consisting essentially of boron-doped diamond-like carbon (Figs. 2 and 3; column 4, lines 55-58);

(b) the resistance temperature detector comprises a material selected from the group consisting essentially of platinum (Figs. 2 and 3; column 11, lines 39-48, column 13, lines, 3-7);

(c) the transducer is a thin film structure (Figs. 2 and 3; column 2, lines 5-14); and

(d) a protective coating layer 8 on the bottom of the transducer (Fig. 3; column 17, lines 25 and 26).

Although Abraham in view of Wickramasinghe do not disclose which material is used to make the temperature sensitive transducer, for the benefit of maintaining the stability of operation in a high temperature environment, it would have been obvious to one of ordinary skill in the art to use the material as taught by Kawaguchi to make a thin-film thermistor such as Abraham in view of Wickramasinghe, because the boron-doped carbon material is stable at a range of elevated high temperatures and the platinum is well known as a good conductor

electrode layer. Furthermore, the protective layer prevents the tip from being oxidized by the air.

7. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abraham (U.S. Patent 5,753,803) in view of Wickramasinghe et al. (U.S. Patent 4,747,698) and further in view of Erskine et al. (U.S. Patent 5,243,858).

Abraham in view of Wickramasinghe teach a temperature sensitive transducer very similar to that of the instant invention. However, both Abraham and Wickramasinghe do not teach the following:

- (a) as in claim 11, the transducer defines a film plane, and the bias current path lies parallel to the film plane; and
- (b) as in claim 12, the transducer defines a film plane, and the bias current path lies perpendicular to the film plane.

Erskine teaches the following:

- (a) the transducer 28 defines a film plane 12, and the bias current path 54 lies perpendicular and parallel to the film plane 12 (Fig. 1).

An integrated circuit such as a thermistor has its sensor components and current path manufactured on a plane like thin-film and packaged with vertical leads. For sensing temperature along a flat surface, it would have been obvious to one of ordinary skill in the art to set the sensor components and its

current path along the thin-film plane so that they are parallel to a surface to be sensed. On the other hand, for collecting the information sensed by the sensor components, it would have been obvious to one of ordinary skill in the art to carry the sensed current along the vertical leads which are perpendicular to the thin-film.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ottesen et al. (6,097,559) is pertinent because Ottesen teaches an asperity detecting means by using a temperature sensitive resistor.

Schaenzer et al. (6,071,007) is pertinent because Schaenzer teaches a thermal asperity detection head.

Fischer (5,969,238) is pertinent because Fischer teaches a thermoelectric microprobe.

Meyer et al. (5,901,001) is pertinent because Meyer teaches a thermal asperity detection head.

Abraham et al. (5,527,110) is pertinent because Abraham teaches an asperity detecting means by using a temperature sensitive resistor.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any response to this action should be mailed to:
Commissioner of Patents and Trademarks Washington, D.C. 20231
Or faxed to:

(703) 872-9306 (for formal communications intended for
entry. Or:

(703) 746-6909, (for informal or draft communications,
please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park
II, 2021 Crystal Drive, Arlington. VA., Sixth Floor
(Receptionist).

Any inquiry of a general nature or relating to the status
of this application should be directed to the Group
receptionist whose telephone number is (703) 305-4700.

Any inquiry concerning this communication or earlier
communications from the examiner should be directed to Kim CHU
whose telephone number is (703) 305-3032 between 9:30 am to
6:00 pm, Monday to Friday.

kc 1/5/05

Kim-Kwok CHU
Examiner AU2653
January 5, 2005

(703) 305-3032


TAN DINH
PRIMARY EXAMINER